



Childhood Aggression, Victimization and the Developing Brain

Debra Pepler
Scientific Board Member, Melissa Institute
York University &
The Hospital for Sick Children



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

Developmental – Different Perspective

- Troubled child understood as requiring educational, mental health, and relationship supports.
- Move away from seeing emotional and behavioural problems as a discipline issue
- Formative/educational consequences & restorative approaches



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

Developmental Pathway of Power and Aggression in Relationships



Elder Abuse

Child Abuse

Marital Abuse

Dating Aggression

Gang Aggression

Workplace Harassment

Sexual Harassment

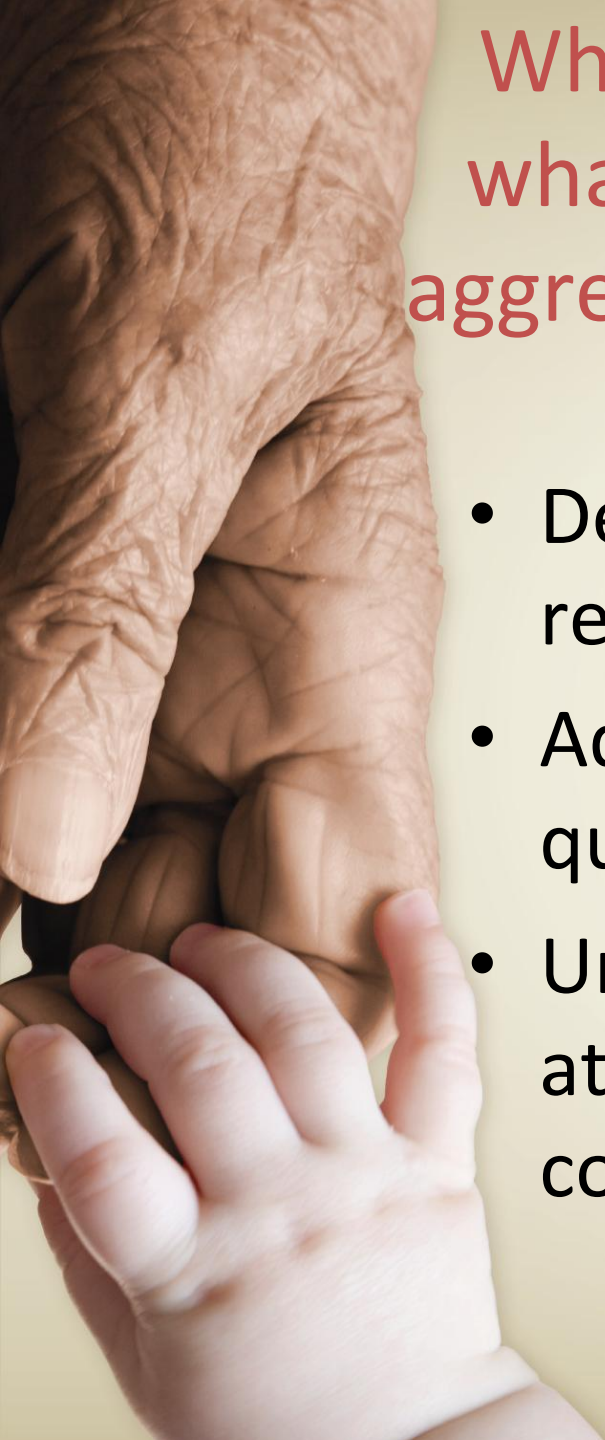
BULLYING



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE





Why is it important to understand what is going on under the skin for aggressive and/or victimized children?

- Development occurs in context of relationships
- Adults are responsible for the quality of children's relationships
- Understanding can change attitudes of parents, educators, coaches & move them to action





Aggressive children are not
“just bad kids” ...

They have missed
important developmental
opportunities in
relationships



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 



MAY 23 1953

What is Not Developing?

- Behavioural regulation: attentional, verbal, and social skills
- Emotional regulation: anger, anxiety, and arousal
- Executive functioning: perspective-taking & problem-solving abilities, consequence-based reasoning
- Moral understanding: empathy, respect, inclusion, and prosocial reasoning

All critical for successful social interactions, mental health and academic success



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



What is Developing?

Aggressive strategies -- in their efforts to thrive
Aggression can be “effective” in gaining control, solving problems, and acquiring resources and social power

However, dysregulation leads to:

- Irritability which then leads to anger and oppositional behaviour
- Anxiety
- Other troublesome behaviours
- Patterns of escalating conflict
- Victimization by peers
- Mental and physical health problems



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE





Developmental Perspective

What is Not Developing?

What is Developing?

Even with development of skills,
relationships matter



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 





What Fosters Development?



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



Nature and Nurture

Children experience their world as an environment of relationships.

- Relationships are important throughout development
- Relationships affect all aspects of development – intellectual, social, emotional, physical, behavioral, and moral.

Adults are responsible for the quality of children's relationships



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 



What is Developing under the Skin?



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

Relationships Matter for Gene Expression

The “operating system” for genes is built over time through:

- Positive experiences, such as exposure to rich learning opportunities.. or
- Negative experiences, such as stressful life circumstances
- Experiences leave a chemical “signature” on genes, which can be temporary or permanent
- Affect how genes are switched on or off.



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



Relationships Matter for the Brain through Genes and Experiences

The brain adapts to the experiences that a child has:

If the child has positive experiences, the brain adapts positively for learning, memory, and regulation

If the child has stressful experiences, the brain adapts negatively, with too much or too little response to any stress.

As brain develops, gene expression adapts, leading to further positive or negative brain development



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE





High Stress in Relationships and Brain Development

- Neurochemical (dysregulated stress response)
- Neurostructural (connections, myelin)
- Neural network (neural loops)



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 



Children's Experiences of Victimization Affect Their Brains

- Peer victimization linked to depressive symptoms
- Peer victimization, depressive symptoms and higher cortisol levels uniquely predicted memory deficits.

Vaillancourt, et al. (2011) Peer victimization, depressive symptoms, and high salivary cortisol predict poorer memory in children, *Brain and Cognition*, 77, 191–199.



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

Children's Experiences of Violence Impact their Genes

Exposure to violence: domestic violence, frequent bullying victimization, and physical maltreatment by an adult

Compared with those not exposed, children who experienced 2+ kinds of violence exposure showed significantly more telomere erosion between ages 5 and 10 (Shalev et al., 2012)



PREVNet

NETWORKS OF
RES OF EXCELLENCE



Genes x Environment

Michael Meaney et al. (McGill)

- Cross fostered rats bred to be highly anxious and reactive. If raised by nurturing mothers, the anxious/reactive gene was modified, even into the next generation
- If rat pup placed back into a chaotic environment, anxious/reactive gene changed back



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



Identical Twins

Different Experiences

Risk is environmentally mediated

- Study of identical twins – one chronically bullied, one not
- Higher rate of psychopathology in victimized twin, despite same levels of genetic risk

(Arseneault et al., 2008)



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



Identical Twins Discordant Bullying and Later Behaviours

- Study of identical twins – one bullied, one did not bully at 7
- At 12, twin who bullied involved in more rule breaking behaviour
- Family relationships with high warmth buffered children who bullied from graduating to
- antisocial behaviors



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE





Relationships are the “active ingredients” of the environment’s influence on healthy human development.

Relationships engage children in the human community in ways that help them figure out who they are, what they can become and how and why they are important to others.

National Scientific Council on the
Developing Child

Working paper #1. Young children
develop in the environment of
relationships



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

Aggressive Children's Relationship Environments

Within the family, peer group, school and community:

- Frequent opportunities to observe and garner reinforcement for being aggressive;
- Relatively few opportunities to observe and be reinforced for prosocial behaviour.



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE





The Capacity of Relationships

- From a developmental perspective, it is important to consider whether the critical relationships in children's lives have the capacity to promote their healthy development.
- Family Relationships
- Peer Relationships
- Relationships with teachers and others



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



Figure 6.2 Children's relationships with parents and peers

	Average of the three relationships scores	% of children who find classmates kind and helpful	% of children who find it easy to talk to mothers	% of children who find it easy to talk to fathers
Netherlands	84.5	80.4	91.7	81.4
Iceland	83.2	80.3	89.3	79.8
Sweden	79.9	82.0	85.5	72.4
Denmark	77.0	77.2	84.2	69.5
Romania	76.7	64.8	90.4	74.8
Finland	75.1	66.1	86.6	72.5
Ireland	74.8	73.4	82.9	68.1
Hungary	74.8	58.1	89.9	76.4
Spain	74.8	67.1	86.5	70.8
Germany	74.7	77.9	81.5	64.5
Norway	74.0	78.2	78.7	65.1
Portugal	73.9	79.4	81.3	61.2
Switzerland	73.5	78.9	79.7	62.0
Estonia	73.4	65.1	86.1	69.1
Austria	72.0	69.0	82.2	64.9
Luxembourg	71.9	73.5	79.5	62.7
United Kingdom	71.7	63.3	83.0	68.6
Poland	70.1	51.0	86.6	72.6
Belgium	69.9	75.0	77.5	57.3
Italy	69.3	68.5	79.7	59.9
Latvia	67.4	54.5	82.0	65.8
Slovakia	67.2	61.7	78.7	61.3
Lithuania	66.8	58.0	80.4	62.1
Czech Republic	66.8	56.0	81.4	62.8
Canada	66.7	58.2	79.3	62.6
Greece	63.8	44.3	83.1	64.1
United States	63.3	56.2	73.9	59.7
France	59.4	56.6	71.2	50.3

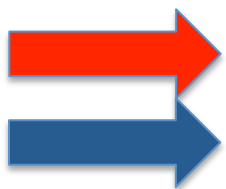
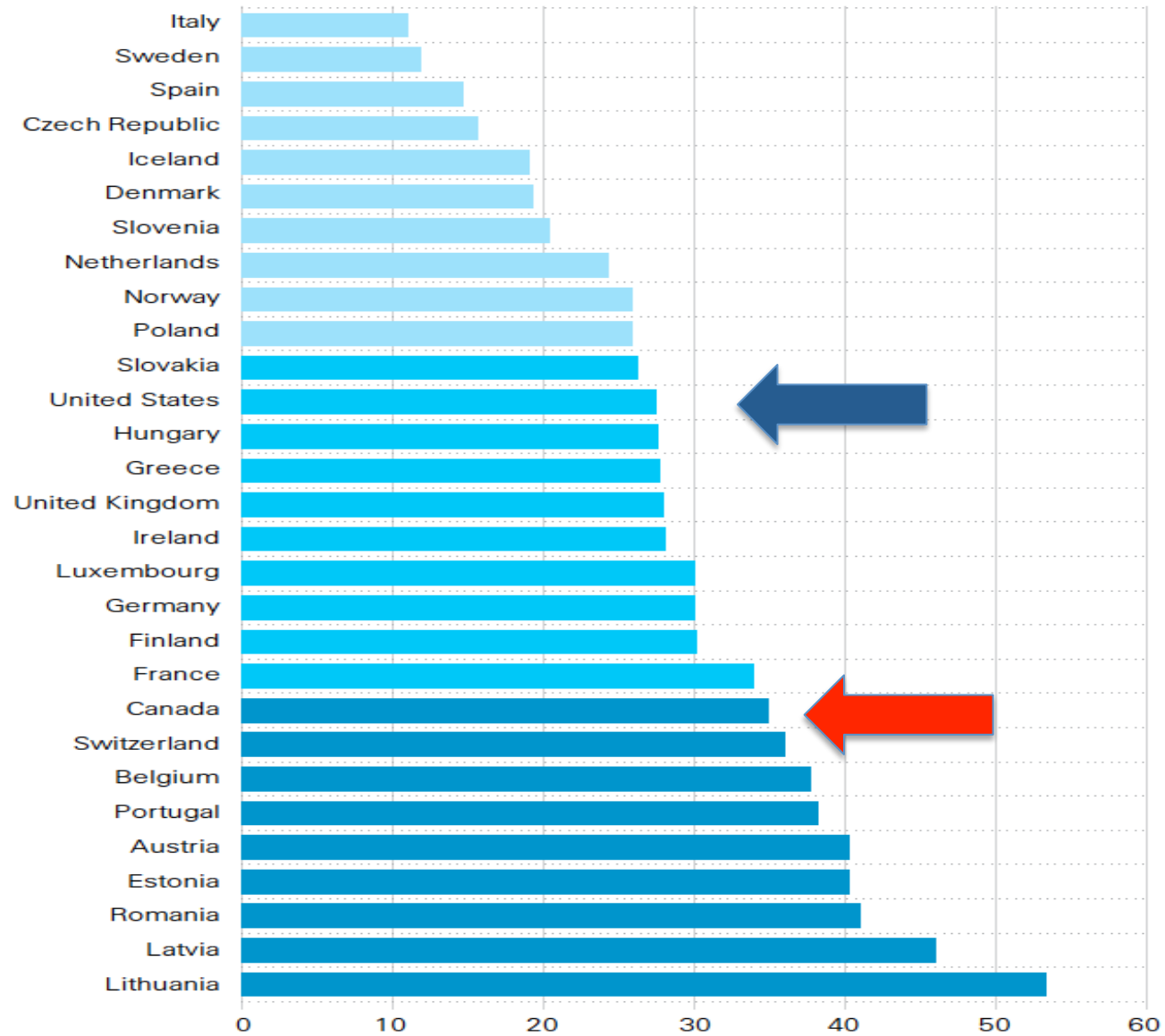
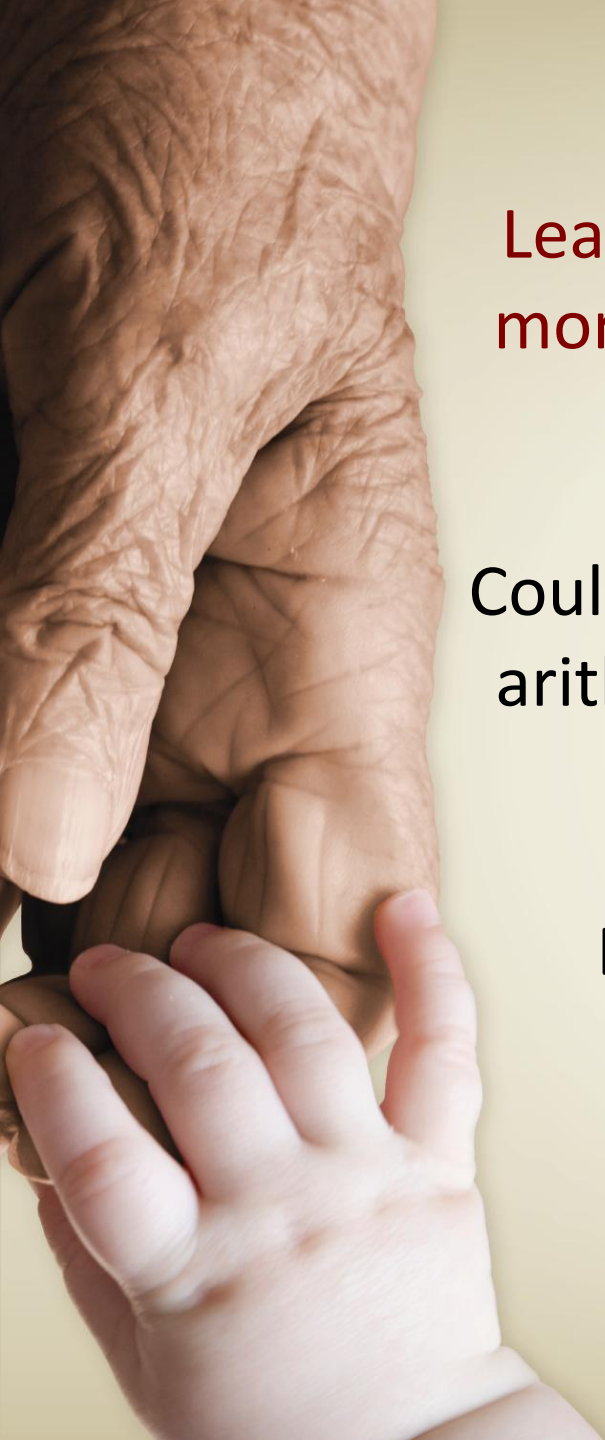


Figure 4.3b Being bullied

% of children aged 11, 13 and 15 who report "being bullied at school at least once in the past couple of months"





Learning to get along with others is much more complex than learning to read or do math!

Could the strategies we use for reading and arithmetic apply to learning how to relate to others?

Elder: “Honour children’s mistakes”



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE





Changes in Aggressive Children's Brain Activity Through Treatment SNAP[®]



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 



Developmental Psychopathology and the Brain

- Dorsal anterior cingulate cortex (ACC) is a key structure for executive functioning (making judgments, monitoring one's behaviour and learning, controlling emotional responses)
- Orbital frontal cortex (OFC) involved in assigning emotional significance, maintaining avoidance or inhibition
- Systems seem to compete for activation: Aggressive individuals show deficits in both ACC and OFC activation



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

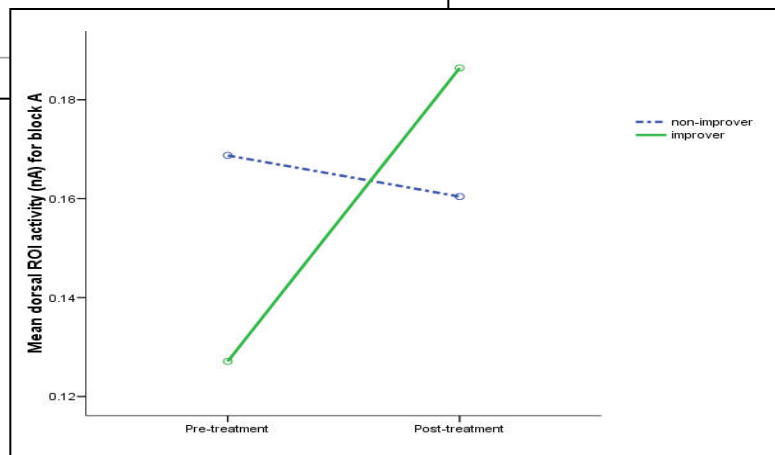
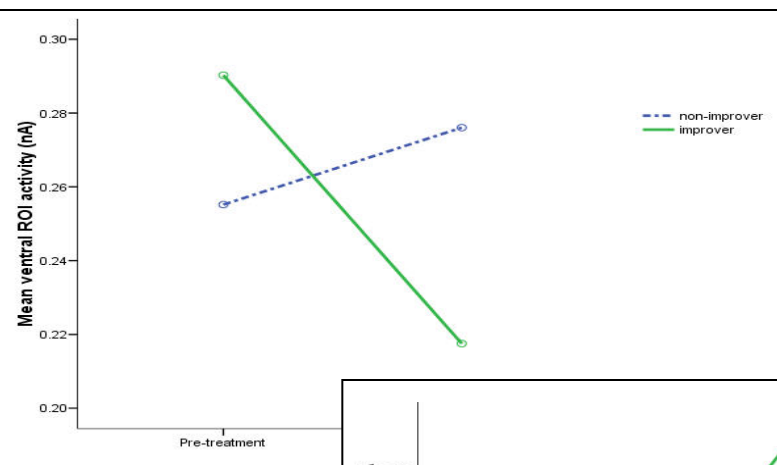
Brain Changes Associated with Treatment Outcomes in Children with Externalizing Problems

Marc D. Lewis Ph.D.
Jim Stieben Ph.D.

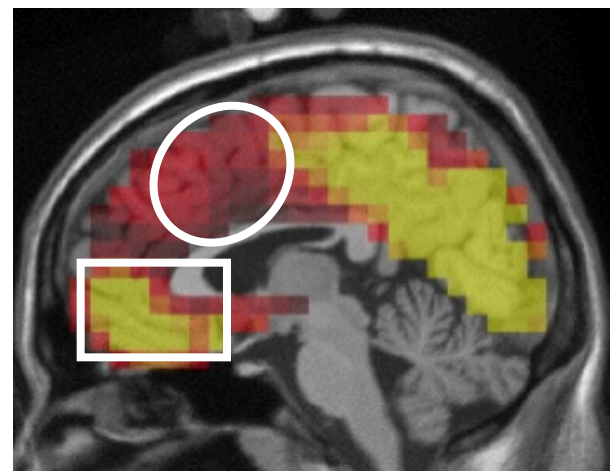
BEHAVIOURAL & BRAIN CHANGES ASSOCIATED WITH TREATMENT OUTCOMES: VENTRAL & DORSAL TREATMENT EFFECTS (PRE TO POST)

HYPOTHESIS:

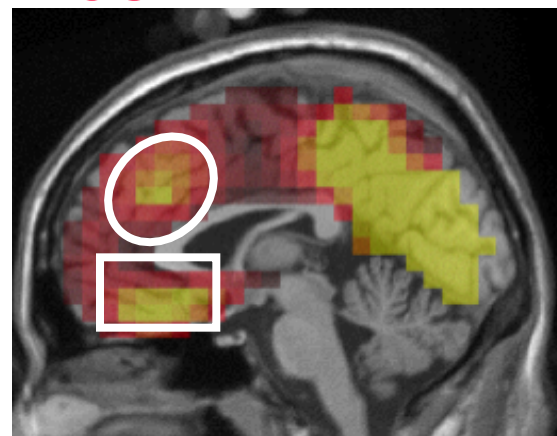
With treatment, we should see a decrease in activity in the ventral brain regions and an increase in activity in the dorsal brain regions implicated in emotional self-regulation and deliberate cognitive control!



PRE



POST



Conclusions

Successful treatment with SNAP and parent management training (Stop Now And Plan Parenting) produce discernable changes in brain systems responsible for cognitive control and self-regulation.



What Fosters Healthy (or Unhealthy) Development?

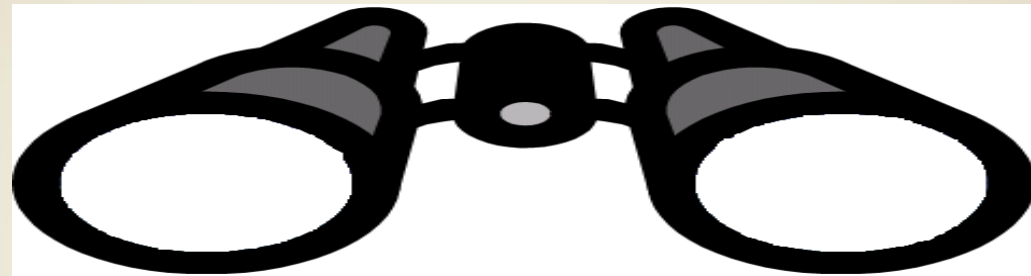


PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE



Bullying is a Relationship Problem that Requires Relationship Solutions



Child or youth's
needs,
strengths,
challenges

Child's or youth's
relationships
with family,
peers, adults, &
community

© Promoting Relationships and Eliminating Violence Network, 2007

NETWORKS OF
CENTRES OF EXCELLENCE 



It Takes a Network to Raise A Child

Preventing violence and promoting healthy relationships requires relationship solutions in all of the places where children live, learn, play and work.

By addressing children's aggression and promoting healthy relationships, we can promote children's healthy development



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

PREVNet Partners

www.prevnet.ca



CANADIAN PSYCHOLOGICAL ASSOCIATION

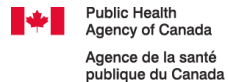


LESBIAN GAY BI TRANS YOUTH LINE
1.800.268.YOUTH
416.962.YOUTH

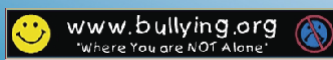
MyHealthMagazine



Canadian Red Cross



Boys & Girls Clubs of Canada
Clubs Garçons & Filles du Canada





A Role for Pediatricians

- Ask questions about friendships and bullying (www.prevnet.ca)
- Communicate concern to child, parent, and school (?)



PREVNet

NETWORKS OF
CENTRES OF EXCELLENCE 

Letter and Resource Sheets

PREVNet and Hospital for Sick Children

I am writing because I am concerned about my patient, _____.

At a recent visit to my office, _____ reported health problems that I assessed as being linked to the stress of being bullied at school. _____ reported bullying is in fact taking place.

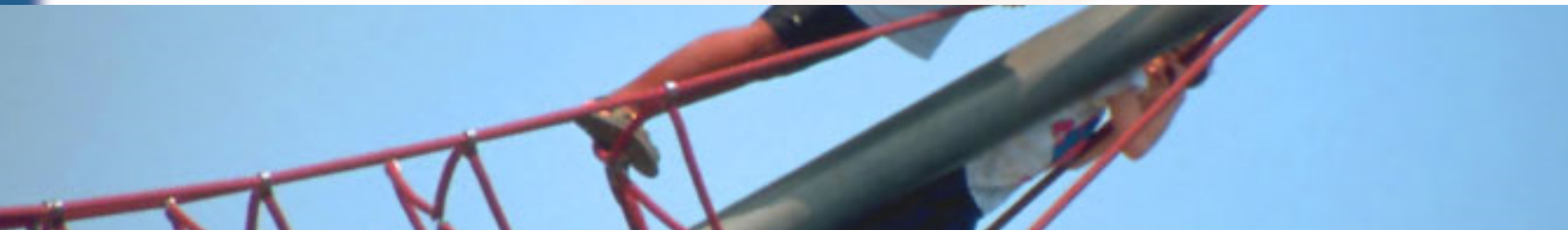
As professionals dedicated to the health and success of -----, it is critical that we communicate and collaborate. I felt that it was important to bring _____'s health problems to your attention. I am concerned that the bullying and related problems are and will continue to have a negative impact on his/her, health and general well being.

I have discussed sending this letter with _____ and his/her parent and they have agreed to my contacting you. I have attached a resource sheet for your reference. If there is any further information that I can provide that might be helpful, please contact me.

THANK YOU!



For Helping Promote Healthy Relationships for the
Healthy Development of All Children and Youth



www.prevnet.ca



PREVNet

Promoting Relationships and Eliminating Violence
La Promotion des Relations et l'Élimination de la Violence